REMARKS

Claim 1, as amended to include the limitation of claim 7, is independent and stands rejected under 35 U.S.C. § 103 as being unpatentable over Yamai et al. '109 ("Yamai") in view of Takita '465 ("Takita"). This rejection is respectfully traversed for the following reasons.

Claim 1 recites in pertinent part, "a rectifier for rectifying an a.c. power output from an a.c. power source to output to the inverter circuit, wherein the control unit controls the amplitude of the motor current according to an absolute value of an output voltage of the a.c. power source *such that a current flowing in the brushless motor becomes small during a period when the absolute value of the output voltage of the a.c. power source increases and becomes great during a period when the absolute value of the output voltage of the a.c. power source decreases*" (emphasis added). As a preliminary matter, it is noted that the Examiner has taken Official Notice that features recited in claim 1 are well-known in the art. Pursuant to MPEP § 2144.03, Applicants respectfully traverse such an assertion and **request the Examiner to cite a reference in support of his position** (*see* second paragraph, last three lines of MPEP § 2144.03, which requires the Examiner to cite a reference in support of his allegation of Official Notice when Applicants traverse). Indeed, only Applicants' specification discloses the claimed feature, and supplies the motivation for providing it within the ***combination*** recited in claim 1.

According to one aspect of the present invention, the claimed configuration can make it possible to reduce the vibration generated by the speed fluctuation associated with the load fluctuation, while also enabling the current flowing from the a.c. power source to be made smoother and the power factor to be increased (*see* page 17, lines 18-19 and page 21, lines 15-16 of Applicants' specification).

The Examiner admits that Yamai does not disclose the aforementioned features of the present invention and therefore relies on Takita to obviate these deficiencies of Yamai. However,

it is respectfully submitted that even assuming *arguendo* proper, the proposed combination does not disclose or suggest the claimed configuration. Specifically, Takita merely discloses a ***general*** arrangement for the alleged rectifier/power source as used in the conventional manner, but is silent as to the ***specific*** arrangement set forth in claim 1.

Specifically, according to claim 1, the rectifier and inverter circuit can effect an indirect matrix converter, while the control unit controls the amplitude of the motor current according to an absolute value of an output voltage of the a.c. power source *such that a current flowing in the brushless motor becomes small during a period when the absolute value of the output voltage of the a.c. power source increases and becomes great during a period when the absolute value of the output voltage of the a.c. power source decreases*. On the other hand, Takita discloses only a general configuration of the alleged rectifier/power source and associated interrelationship therebetween, and is completely silent as to the *specific control manner and corresponding circuit* configuration thereof much less suggest that which is recited in claim 1.

In this regard, the specifically arranged combination as recited in claim 1 can make it possible to suppress ***both*** the generation of the vibration due to the torque pulsation corresponding to the load fluctuation of the brushless motor, and a drop in the power factor due to pulsation of the bus voltage input to the inverter circuit. Takita is silent as to the *specific control manner and corresponding circuit therefor*, let alone suggest ***dual*** control parameters. Only Applicants have recognized and considered such ***dual*** effects, and conceived of a novel and non-obvious configuration which can make it possible to realize said effects. Accordingly, even assuming *arguendo* proper, the proposed combination of Takita and Yamai does not disclose or suggest each and every limitation recited in claim 1.

Moreover, Yamai is directed to torque control in a single-piston rotary compressor, and the object thereof is to suppress torque pulsation of the compressor. That is, the inverter circuit of Yamai is controlled to suppress the torque pulsation generated due to load fluctuation per rotation in the brushless motor (*see* col. 2, lines 33-38 of Yamai). However, as admitted by the Examiner, Yamai does not disclose the specific configuration between an a.c. power source and the inverter circuit. It follows that Yamai does not disclose that a bus voltage input from the a.c. power source to the inverter circuit pulsates, whereby the power factor drops. Accordingly, Yamai is completely silent as to a need or desire for a specific configuration for controlling the torque pulsation generated due to the pulsation of the bus voltage input to the inverter circuit. As noted above, Takita does not obviate this deficiency of Yamai.

Even further, it should be noted that because Takita uses an active filter, a control unit for exclusively controlling the active filter is necessary in addition to the control unit for controlling the inverter circuit in Yamai. Accordingly, the proposed combination of Yamai and Takita requires two control units so as to increases the complexity of the device, thereby leading one of ordinary skill in the art away from such a combination. In contrast, by making it possible to control the inverter circuit by the control unit in the manner discussed above, the present invention can enable the vibration generated by the torque fluctuation associated with the load fluctuation of the brushless motor to be reduced, the current flowing from the a.c. power source to be made smoother, and the power factor to be increased.

Only Applicants have recognized these effects and conceived of a configuration capable of suppressing, only by controlling the inverter circuit, both the torque pulsation corresponding to the load fluctuation of the brushless motor and the torque pulsation generated by the pulsation of the bus voltage input to the inverter circuit.

Application No.: 10/552,662

Claim 13 is independent and stands rejected under 35 U.S.C. § 103 as being unpatentable over Takita in view of Yamai. This rejection is respectfully traversed for the following reasons.

Claim 13 recites in pertinent part, "a control unit for ... controlling the motor current of the brushless motor, wherein the control unit controls the motor current ***via the inverter circuit*** ... and controls a current output ***from the a.c. power source*** to the power converter based on the comparison between the amplitude of the motor current and the average of the motor current" (emphasis added). Yamai is completely silent as to control of the current output from specifically an a.c. power source. Indeed, Yamai is completely silent as to an expressly disclosed AC power source, let alone suggest control thereof much less control thereof in the manner recited in claim 13. Rather, as shown in Figure 5, Yamai is directed only to control of the motor current ***through the inverter 5***. Accordingly, even assuming Yamai has an a.c. power source or is modified to include the one allegedly taught by Takita, the cited prior art does not disclose any circuit which controls the current output from an a.c. power source to a power converter.

On the other hand, according to one exemplary embodiment of claim 13 illustrated in Figure 11 of Applicants' drawings, the control unit can control output signals sent to ***both*** the inverter 3 and the charging/discharging circuit 20. On the other hand, Yamai discloses only controlling current at inverter 5. Yamai does not disclose any circuit which can control a current output from an a.c. power source. As noted above, Yamai is silent as to an a.c. power source, let alone suggest a circuit which controls a current output therefrom. Moreover, Takita discloses only the AC line (Figure 6), but as admitted by the Examiner is silent with regard to a current control unit. Accordingly, even assuming *arguendo* proper, the proposed combination of Takita and Yamai does not disclose or suggest each and every limitation recited in claim 13.

According to one aspect of the present invention, the claimed configuration can make it possible for the current output from the a.c. power source to be made smoother, the power factor to be further increased, and the generation of the vibration due to the load torque fluctuation to be suppressed (*see* page 17, lines 18-19 and page 26, lines 9-11 of Applicants' specification). The cited prior art is completely silent as to the aforementioned effects let alone suggest the configuration needed to realize said effects.

In this regard, Takita merely describes a general motor drive control circuit including a rectifier 91, capacitor 92, and inverter 93 (*see, e.g.*, Figure 6 of Takita), and Yamai discloses only an algorithm for controlling the motor current based on the relation between the average value of the amplitude and the change in the amplitude (*see, e.g.*, Figure 8 of Yamai). It follows that the configuration of Yamai merely calculates the change in the voltage amplitude in accordance with the magnitude of the inverter input current (based on the current output from a commercial power source) and performs the control based on the change (*see, e.g.*, col. 22, lines 28-33, and Figure 15 of Yamai). Accordingly, the algorithm of Yamai controls only the inverter circuit to control the motor current. Yamai does not disclose a configuration in which the current output from the a.c. power source is controlled (e.g., current which will be input to the inverter circuit). Moreover, Yamai does not describe a power converter as arranged in claim 13, and further does not suggest a configuration for controlling the current itself output from the a.c. power source to the power converter.

In sum, according to one aspect of the present invention as embodied in claim 13, by making it possible to both control the current output from the inverter circuit ***and*** to control the current output from the a.c. power source to the power converter, the current output from the a.c. power source can be made smoother, the power factor can be increased, and the generation of

vibration due to the load torque fluctuation can be suppressed. In contrast, even assuming *arguendo* proper, the proposed combination of Takita and Yamai does not suggest a configuration capable of controlling ***both*** the current output from the inverter circuit and the current input to the inverter circuit.

"All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 165 USPQ 494, 496 (CCPA 1970).

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as the independent claims are patentable for the reasons set forth above, it is respectfully submitted that all claims dependent thereon are also patentable. In addition, it is respectfully submitted that the dependent claims are patentable based on their own merits by adding novel and non-obvious features to the combination.

Based on the foregoing, it is respectfully submitted that all pending claims are patentable over the cited prior art. Accordingly, it is respectfully requested that the rejections under 35 U.S.C. § 102/103 be withdrawn.

CONCLUSION

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

Application No.: 10/552,662

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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